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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,543	03/04/2002	Daisuke Kojima	112117	2272

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EXAMINER

PIZIALI, JEFFREY J

ART UNIT	PAPER NUMBER
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2629

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/28/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/086,543	Applicant(s) KOJIMA ET AL.	
	Examiner Jeff Piziali	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2006 and 06 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5,12,13,30 and 33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,12,13,30 and 33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed (on 6 October 2006) in this application after final rejection (mailed 10 July 2006). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 14 September 2006 has been entered.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

3. The drawings were received on 23 June 2005. These drawings are acceptable.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 1, 2, 5, 12, 13, 30, and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claims 1 and 30 each separately recite the limitation "said electro-optic element" in the second to last line. There is insufficient antecedent basis for this limitation in either claim. It would be unclear to one having ordinary skill in the art whether the claimed "liquid crystal element" (see line 1) and the "electro-optic element" are separate and distinct from one another; or whether these "elements" are one and the same.

7. Claims 2, 5, 12, 13, and 33 are rejected under 35 U.S.C. 112, second paragraph, as simply being dependent upon rejected base claims.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 2, 5, 12, 13, 30, and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Matsui et al (US 6,972,773 B2).

Regarding claim 1, Matsui discloses a driving method of a liquid crystal element [Fig. 3; 11] for allowing said liquid crystal element to display a level of grayscale (see Column 5, Lines 32-47), said liquid crystal element displaying throughout a frame period (see Figs. 16A-16C) by switching ON-state said liquid crystal element during a period corresponding to grayscale data that defines said level of grayscale, said method comprising: sequentially selecting, according to said grayscale data, a plurality of first sub-field periods [Fig. 16B; B0-B3] continuous with respect to one another and a plurality of second sub-field periods [Fig. 16B; B4, B5-1, B5-2, B6-1, etc.] continuous with respect to one another used for securing a period corresponding to said grayscale data, said plurality of second sub-field periods following consecutively said plurality of first sub-field periods (see Fig. 16B), each of said plurality of second sub-field periods being substantially equal to a length of a sum of said plurality of first sub-field periods [i.e., $(B0 + B1 + B2 + B3)$] and any one of the first sub-field periods [i.e., B0], in a direction from a first sub-field period and a second sub-field period positioned on a boundary of said plurality of first sub-field periods and said plurality of second sub-field periods toward a first sub-field period and a second sub-field period at a position most remote from said boundary; and driving by switching ON-state said electro-optic element during said sub-field periods selected (see Column 12, Line 1 - Column 13, Line 2).

Regarding claim 2, Matsui discloses said plurality of first sub-field periods and said plurality of second sub-field periods being included in a same frame period (see Fig. 16B; Column 12, Lines 41-50).

Regarding claim 5, Matsui discloses a period during which said liquid crystal element is switched ON-state being inserted in said boundary regardless of said grayscale data (see Fig. 16B; Column 12, Lines 36-50).

Regarding claim 12, Matsui discloses said grayscale data being composed of N bits (N is an integer not less than 2) to define a level of grayscale having 2 to the N^{th} power kinds; high-order M bits in said N bits defining a level of grayscale said plurality of second sub-field periods should display; low-order (N-M) bits in said N bits defining a level of grayscale said plurality of first sub-field periods should display; and said M is an optimal solution of M given on an assumption that said frame period includes $(2^{N-M}-1)$ first sub-field periods (see Figs. 15 & 16; Column 11, Line 54 - Column 12, Line 62).

Regarding claim 13, Matsui discloses said grayscale data being composed of N bits (N is an integer not less than 2) to define a level of grayscale having 2 to the N^{th} power kinds; a length of each of said second sub-field periods being equal to a length of a period to display a level of grayscale defined by a least significant bit in high-order M bits in said N bits; the number of said plurality of second sub-field periods being equal to a maximum value specified by said M bits; a length of each of said first sub-field periods being equal to a length of a period to display a level of grayscale defined by a least significant bit in low-order (N-M) bits in said N bits; and the number of said plurality of first sub-field periods being equal to a maximum value specified by said (N-M) bits (see Figs. 15 & 16; Column 11, Line 54 - Column 12, Line 62).

Regarding claim 30, this claim is rejected by the reasoning applied to claim 1; furthermore Matsui discloses a driving device of a liquid crystal element [Fig. 3; 11] for allowing said liquid crystal element to display a level of grayscale (see Column 5, Lines 32-47), said liquid crystal element displays throughout a frame period (see Figs. 16A-16C) by switching ON-state said liquid crystal element during a period corresponding to grayscale data that defines said level of grayscale, said device comprising: a selecting circuit that sequentially selects, according to said grayscale data, a plurality of first sub-field periods [Fig. 16B; B0-B3] continuous with respect to one another and a plurality of second sub-field periods [Fig. 16B; B4, B5-1, B5-2, B6-1, etc.] continuous with respect to one another used for specifying the period corresponding to said grayscale data, said plurality of second sub-field periods following consecutively said plurality of first sub-field periods (see Fig. 16B), each of said plurality of second sub-field periods being substantially equal to a length of a sum of said plurality of first sub-field periods [i.e., $(B0 + B1 + B2 + B3)$] and any one of first sub-field periods [i.e., B0], in a direction from a first sub-field period and a second sub-field period positioned on a boundary of said plurality of first sub-field periods and said plurality of second sub-field periods toward a first sub-field period and a second sub-field period at a remotest position from said boundary; and a driving circuit that switches ON-state said electro-optic element during said subfield periods selected (see Column 12, Line 1 - Column 13, Line 2).

Regarding claim 33, Matsui discloses electronic equipment, comprising: a display device [Fig. 3; 4], including a plurality of liquid crystal elements aligned in a matrix, that displays an

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image related to said electronic equipment (see Fig. 13A; Column 5, Lines 32-47 and Column 11; Lines 10-21).

Response to Arguments

10. Applicants' arguments with respect to claims 1, 2, 5, 12, 13, 30, and 33 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. Ishii (US 7,088,325 B2), Kondoh et al (US 6,804,029 B2), Correa et al (US 6,714,250 B1), Correa et al (US 6,476,875 B2), and Yamazaki et al (US 5,699,078 A) are cited to further evidence the state of the art pertaining to liquid crystal driving methods and devices.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (571) 272-7678. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571) 272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jeff Piziali
19 December 2006